sinking, with muscular twitching of the limb, incoherence of speech, picking at the bed-clothes, a brown furred tongue, and sordes on the teeth. He died quietly at about 1 P. M. Mr. Holmes stated that he had brought forward this case with a view to comparing the relative advantages of silk and catgut ligatures for tying the larger arteries in their continuity. His own experience had not been enough to justify him in expressing a dogmatic opinion, as he had only applied the catgut ligature to four of the large arteries in their continuity, viz., to the subclavian and carotid, which were tied simultaneously for thoracic aneurism, and in which the man died eight weeks afterwards from the result of galvano-puncture; thirdly, to the femoral artery, as above narrated; and, fourthly, to the left carotid, in a case upon which he had operated twenty-two days ago. In the first instance the vessels were found to be closed by a kind of diaphragm of no great extent, and neither of the vessels had been cut through. In the second case, that of the ligature of the femoral, of which the notes had been read *in extenso*, the artery was shown to the members present. The knot of the ligature was visible; but there was nothing to be seen of the rest of the string. The artery was perfectly continuous. In the fourth case there had been free suppuration from the wound; but now, on the twenty-second day, there was no irritation about it, and no part of the ligature had come away. Such, Mr. Holmes stated, was his experience with the carbolized catgut ligature, and the results, though far from conclusive, were quite consistent with the opinion which he entertained that the antiseptic ligature was a most efficient agent in combating the tendency to secondary hemorrhage, and that it rendered possible that union by first intention which was John Hunter's object in his first operation on the femoral artery.

Mr. Holmes simply brought forward the cases as examples of catgut ligature, the action of which did not depend on the absence of suppuration, but rather on its effects on the vessel. The ligatures might melt away, and pulsation return; but he believed the important thing to be that they did not of necessity divide the vessel.

Mr. Callender said that it was pretty well known that he did not use Lister's antiseptic method, but his own. In three cases where catgut had been applied at St. Bartholomew's, hemorrhage had followed. In one case a young patient in good health had the femoral thus ligatured, and the wound was drained by keeping in it a piece of catgut. On the tenth day pulsation returned; by and by the draining catgut came away in half—the remainder had melted. Next came a gush of blood, and the patient died of hemorrhage after amputation at the thigh. No ligature was to be seen round the artery. Beneath the site of the knot was the fatal opening, where the walls must have been contused, and sloughing had followed.—*Medical Times and Gazette*, Nov. 27, 1875.

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46. *Carbolized Catgut Ligature.*—The following is the method of preparing this ligature. The material is really a part of the peritoneum of the sheep, with some fibres of unstriped muscle. This, having been properly cut into lengths and sizes for ligatures, might be simply dried and used, or used fresh, but in either of these conditions it is slippery, hard to tie, and when tied apt to stretch, and the knot to slip. Mr. Lister, anxious to procure a ligature which should melt away and be absorbed without acting as a foreign body in the wound, and looking to the somewhat unsatisfactory experiences of Astley Cooper and others, found that by a special preparation this catgut was so altered as to become a firm and useful ligature. If it is suspended in an emulsion of oil and water, during the first few days it becomes dull and opaque, but then a remarkable change occurs: it becomes clear, bright, and hard, and capable of being tied without stretching and slipping. In order to attain this changed condition it is necessary to keep it suspended in the emulsion for about two months, the bottom of the vessel being so arranged that the water, as it separates from the oil, falls down clear of the suspended catgut. It will be ready in two months, but it goes on improving if kept in the emulsion for a much longer period. In order to make a very fine emulsion, the water was mixed with something which the oil would take from it—say spirits of wine—and the water was thus left suspended amongst the oil in very minute drops.

Mr. Lister wished to have an antiseptic ligature, and he found that carbolic acid had the requisite properties for forming along with water and oil the required fine emulsion. Hence the *carbolized* catgut ligature.—*Ibid.*

OPHTHALMOLGY.

47. *On the Function of the Ciliary Muscle.*—In conjunction with Dr. Nuel, of Luxembourg, Dr. **Warlomont** has contributed an elaborate account of the ciliary muscle to the *Dictionnaire Encyclopédique des Sciences Médicales;* and the entire article is to be found in the *Annales d'Oculistique* (May and June, 1875). The anatomical relations of the muscle, as a whole, and the arrangement of its two principal sets of fibres, are elaborately illustrated in the first portion of the article. Before stating his views on the function to be assigned to these different sets of muscular fibres, Dr. Warlomont quotes the opinion of Dr. Giraud-Teulon upon this very point, which is to the effect that no hypothesis has as yet served to explain the exact *rôle* played by the ciliary muscle in producing the convexity of the crystalline lens; and he himself was unable to aid in clearing the obscurity. Since Giraud-Teulon wrote as above, ten years have elapsed, and still the problem is unsolved; and while Warlomont agrees with Giraud-Teulon in considering the theory propounded by Helmholtz, and now generally received as the most probable, yet he is of the opinion that it only partly explains the facts as they occur; and he thinks it highly probable that the relaxation of the suspensory ligament, and the consequent increase in the convexity of the crystalline lens, are due to the action of the circulur fibres alone; and that it is the function of the radiating fibres to antagonize the circular fibres, by again putting the suspensory ligament on the stretch, and by restoring the somewhat flattened condition of the lens. Although he admits this to be an hypothesis, Dr. Warlomont thinks that the functions of the ciliary muscles are analogous to, if not identical with, those of the iris; and that, although the power of accommodation is compatible with absence of the lens, as a rule the two structures perform their functions in the same manner. The probability of this being the case is due to the fact that the innervation of the two structures is through the same nerves; so that in a state of health the accommodation takes place *pari passu* with the movements of the iris. As exceptions to this, there are some diseases of the spinal cord in which there is persistent action of the iris, although the power of accommodation is completely abolished.

Very remarkable differences have been shown to exist between the ciliary muscles of eyes which were myopic and those which were hypermetropic during life, and they are relied upon by Dr. Warlomont as supporting his theory; and while he adopts the general opinion that there is no such power as that of negative accommodation—adaptation of the eye for distant objects—he yet holds it impossible that the accommodation can under these circumstances be absolutely relaxed, inasmuch as the muscular tonicity still remains, and must be taken into consideration.

"It has been objected," says Dr. Warlomont, "that, as the radiating fibres of the muscle, when in action, form an arc with the convexity inwards, a separation of the muscle from the sclerotic must take place after each contraction, and that, unless the space so formed be filled by some fluid or other, the pressure of the atmosphere would prevent any action of the muscle whatever." And, in answer to this objection, he asks whether it is clearly proved that there is any such separation between the muscle and the sclerotic? or whether it is quite clear that the sclerotic does not follow and adapt itself to all the movements of the muscle, which must, in any case, be of very limited extent?

In concluding this part of his subject, Dr. Warlomont admits that he also, like Dr. Giraud-Teulon before him, can throw but little light upon this confessedly obscure problem in physiological optics.—*London Med. Record,* Nov. 15, 1875.